Utilities Expand Personnel Capabilities with Managed SCADA Systems

As the water and wastewater industry faces a shrinking labor source, remote monitoring can fill the experience gap.

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About one third of water and wastewater utility workers will retire by 2018, according to the 2008 Water Environment Federation report. More than 79 million baby boomers will reach retirement age during the next 10 years. According to a study authored by Jones and Henry Engineers, funding deficits, heightened federal security and mounting regulations under the Clean Water and Safe Drinking Water Acts are making operation with such limited resources difficult. One of those resources is training.

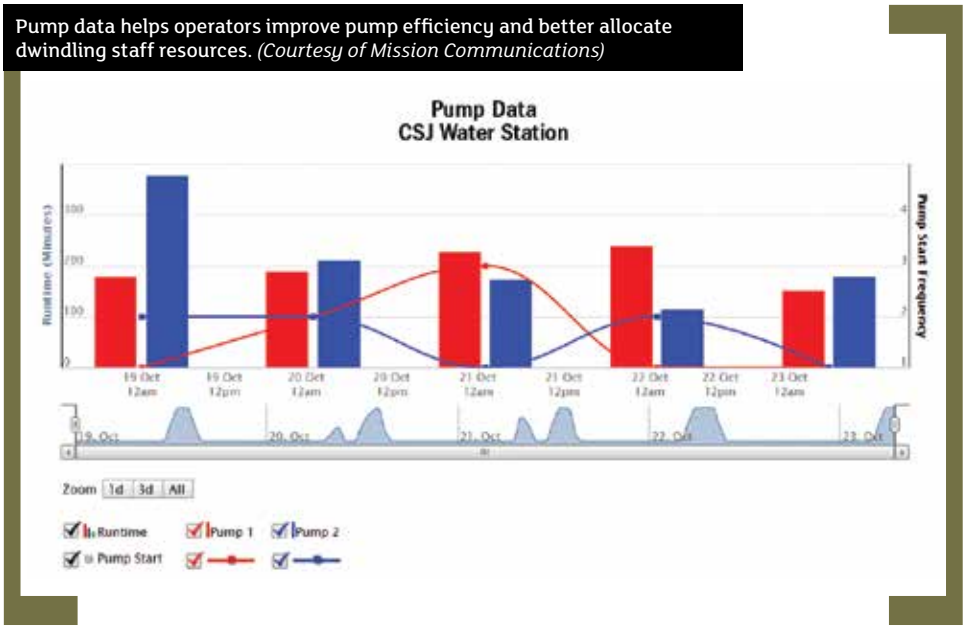
Many municipalities have addressed the skilled worker shortage by adopting field automation and mobile computing tools, such as wireless supervisory control and data acquisition (SCADA). Wireless SCADA has proven highly effective at increasing worker productivity in the field by broadening access to operational information and diagnostics. This remote integration has helped utilities incorporate data and analysis into planning and maintenance.

Utilities Do More with Less

Mary Mason, senior control systems specialist with Jones and Henry Engineers, says today's utilities must do more with less. According to Mason, managed cellular SCADA can provide a viable stopgap by offering field technicians and administrators better real-time, anywhere access to key data, information and maintenance records.

"It enables fewer people to manage and control an entire system—even at home if needed," Mason says. This is especially helpful to small- and medium-size utilities that sometimes lack the funding to implement expensive strategies. Mason says remote access provided by managed SCADA and monitoring benefits these utilities the most.

A cost-effective managed SCADA system can help utilities maintain and monitor remote sites and equipment with fewer resources. Several features—including a Web portal, real-time alarms and purpose-built reports—simplify system management. Simplification is especially helpful at a time when many workers are retiring. Utilities should seek providers that offer ongoing training that keeps operators and managers informed of industry trends and technical



Pump data helps operators improve pump efficiency and better allocate dwindling staff resources. *(Courtesy of Mission Communications)*

knowledge. Some managed SCADA providers use webinars and webcasts as a way to train new operators and managers on the Web-based SCADA system.

Managed SCADA Stopgap

Monitoring and control of remote equipment is especially tough when utilities face shortages of funds and personnel. Managed cellular SCADA helps bridge the gap.

The Cape San Juan Water District on San Juan Island had a part-time staff, which made servicing remote wells and pumps costly and inconvenient. Pump station monitoring is critical to the district, in which over-pumping can cause saltwater intrusion and destroy wells. The district maintains three wells, two reservoirs and a water-production facility that services the south end of the island.

Before installing a managed SCADA system, personnel had to make a two-hour trip to a remote well house to monitor tank levels. Bob Charters, president of the water district, said this requirement strained the district's limited manpower.

"Watching that tank was wasting an hour or two each day," Charters said. Regular site visits were eliminated after the district installed the SCADA system, a single tank level sensor and a flow meter inside the well pump house to monitor and report general alarms, pump failures and runtimes. The SCADA system provides daily reports on pump runtimes, cumulative flow, and high and low tank levels. Alarm conditions on tank level and other equipment are immediately reported.

Charters checks and analyzes well pump performance, water usage and water tank levels using the system's Web portal. He said he has been impressed with the system's reliability.

"As you can imagine, reliability is of paramount importance given our location," Charters said. "We can't just call up our service company and tell them to hop on over and fix a problem."

Bypassing the Experience Gap

A shortage of manpower and funding are not the only problems utilities face. With the retirement wave, fewer people will be able to thoroughly train incoming workers. Although apprenticeships are common in many trades, mentoring is needed in the water and wastewater industry to guarantee a qualified workforce. Many utilities are unable to offer this service. In several cases, mentoring has been addressed at the state level.

The Colorado Wastewater Utility Council was proactive in 2005 when it successfully created the Colorado Water and Wastewater Mentoring Program. The free program matches mentees with mentors by area of interest and need.

New workers obtain technical and managerial training from experienced personnel on topics such as wastewater problem-solving, regulatory compliance, watershed activities and standards-related issues. Mentees can post questions on the program website and obtain government certifications. Colorado utilities also collaborate in mutual problem-solving.

The Rural Community Assistance Corporation in California offers a pilot training program that serves small rural utilities that cannot provide ongoing water operator education. The program is designed for young adults pursuing a water and wastewater career.

Students earn continuing education units and are prepared for the State of California Level 2 (D2) water operator certification test. Training lasts one to two years and is condensed into two- or three-week segments with hands-on activities. Students can interact with experienced operators in the field and receive job search and placement support.

The U.S. Environmental Protection Agency also offers a central database for training, internships, mentoring and certifications in partnership with state and industry organizations. Federal, state, foundation and university funding are available for ongoing education and certification of incoming employees. Information is available by geographic area or area of interest.

Several municipalities offer training courses for entry-level water and wastewater treatment plant operators as a way to prepare for the large number of retiring personnel in the coming years. Utilities may also want to consider offering incentives to entice young workers to join their staff.

Preparation and tools that can be easily implemented will help during the industry transition, as older workers retire and younger workers step in to fill their shoes. ■

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